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Atrial Fibrillation

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Introduction

▪Atrial fibrillation is the most common type of treated heart arrhythmia where the heart beats too slowly, too fast, or in an irregular way (CDC, 2020).
▪Atrial fibrillation occurs when upper chambers and lower chambers are not coordinated, causing the heart to beat too slowly, too quickly or irregularly (CDC, 2020).
▪Atrial fibrillation has been selected as topic because people with atrial fibrillation have a four to- fivefold increased risk of stroke and a two-to threefold increased risk of heart failure (McCane & Huether, 2018).
▪It is important as a provider to understand the underlying pathophysiology of atrial fibrillation so that steps can be geared appropriately to treat the disease and prevent the inevitable life threatening complications like stroke and thromboembolism.
▪Atrial Fibrillation is complicated for patients due to specialized terminology, long-term adherence, array of potential interventions and symptoms monitoring (Aronis et al., 2017).

Sign and symptoms of Atrial Fibrillation

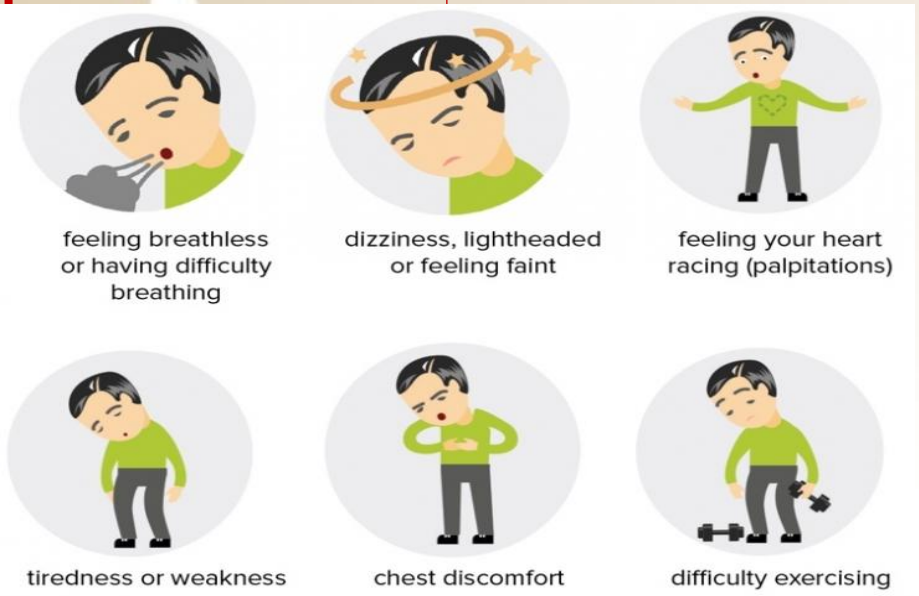

Fig 1: (Heart Foundation, 2020)

Signs and Symptoms

Some people with A fib do not have any symptoms, some may experience one or more of following symptoms:

- Irregular heartbeat
- Heart Palpitation
- Lightheadedness
- Extreme fatigue,
- Sweating
- Shortness of breath
- Chest pain

(CDC, 2020).

Symptoms may vary depending upon the type of atrial fibrillation.. There are three different kinds of atrial fibrillation:
Paroxysmal AF – This is a type of AF that comes and goes. Episodes can last for minutes, hours or days but not usually longer than a week.
Persistent AF – AF episodes that last longer than seven days at a time.
Long-standing persistent or permanent AF – AF has been ongoing for more than a year
(Heart Foundation, 2020).

Pathophysiological Processes

Underlying pathophysiology

High-resolution mapping studies have significantly contributed to novel insights into AF mechanism which shows persistence of AF is associated with a high incidence of focal patterns of activation. Features of these focal activation patterns indicated that they could be attributed to transmural propagation of fibrillation waves. However, "focal fibrillation waves" can only appear when there is electrical asynchrony between the endocardial and epicardial layer (DeGroot & Allessie, 2019). In a healthy heart, regular electrical signals keep heart rate at a steady rhythm of between 60 and 100 beats per minute. This is called sinus rhythm. But with AF, the electrical signals become random and chaotic, causing the top two chambers of heart (the atria) to twitch or quiver. Leading the heart rate to become irregular and can cause it to beat faster than usual (Heart foundation, 2020).

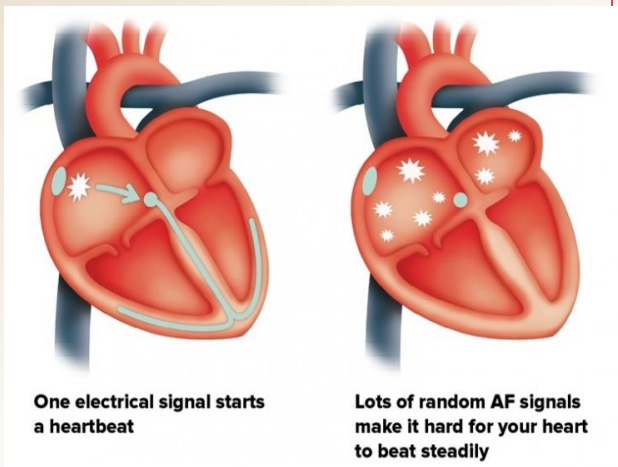

Fig 2: (Heart Foundation, 2020).

Significance of Underlying Pathophysiology

- The prevalence of heart failure (HF) is projected to increase 46% and its costs double to $70 billion by 2030. (AF) is the most common sustained arrhythmia encountered in HF, with an average prevalence of 25%. (Carlise et al, 2019).
- Atrial fibrillation is a major cardiac cause of stroke (Kim & Roh, 2016). Pathogenesis involving thrombus forma-tion in patients with atrial fibrillation can play significant role to prevent stroke..
- Studies have established advanced age, male sex, European ancestry , sedentary lifestyle, smoking, obesity, diabetes mellitus, obstructive sleep apnea, and elevated blood pressure predispose to AF and each factor has been shown to induce structural and electrical remodeling of the atria (Staerk et al., 2017) . Knowing modifiable risk factor is important to detect and prevent

Cascade of Pathophysiology

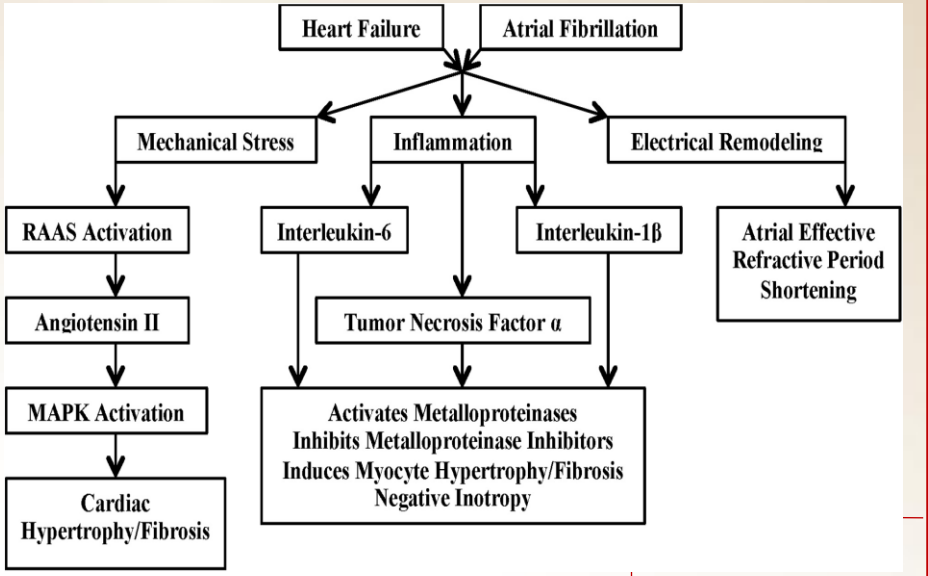

Fig 3: (Carlise et al., 2019)

Implications for Nursing Care

- Estimating the lifetime risk of atrial fibrillation in various subgroups with one or multiple elevated or borderline-elevated risk factors might help to design preventive strategies (Staerk et al.., 2018) .
- Individualized Patient support, education and monitoring (Elliot, 2014).
- Educating patient on the importance of adherence to medication, follow up, and prevention of reoccurrence to prevent the complications like stroke and heart failure.

Conclusion

- Atrial fibrillation is the most common type of cardiac arryhthmia which can be symptomatic or asymptomatic..
- Pathogenesis is focused on foci for ectopy and various risk factors . Newer studies are continuing to evolve.
- Nurses can play a significant role to educate patient on modifiable risk factors and adherence to treatment regimen. Treatment regimen might be medication, catheter ablation or cardioversion.

References

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